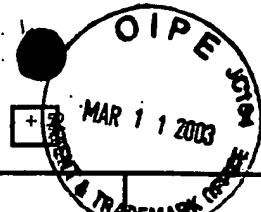


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<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(use as many sheets as necessary)</i>				Application Number	09/934,739
				Filing Date	August 22, 2001
				First Named Inventor	Louis B. ROSENBERG
				Group Art Unit	2675
				Examiner Name	Bell, Paul A.
Sheet	1	of	3	Attorney Docket Number	IMMR-020/03US (New) IMMIP018B (Old)

U.S. PATENT DOCUMENTS					
Examiner Initials	Cite No. <sup>1</sup>	U.S. Patent Document		Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Number	Kind Code <sup>2</sup> (if known)		
	A1	5,785,630		Bobick, et al.	07/28/1998
	A2	5,766,016		Sinclair et al.	06/16/1998
	A3	5,547,382		Yamasaki et al.	08/20/1996
	A4	5,466,213		Hogan et al.	11/14/1995
	A5	5,334,027		Wherlock	08/02/1994
	A6	5,309,140		Everett, Jr., et al.	05/03/1994
	A7	5,299,810		Pierce et al.	04/05/1994
	A8	5,275,174		Cook	01/04/1994
	A9	5,271,290		Fischer	12/21/1993
	A10	5,240,417		Smithson et al.	08/31/1993
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	A15	5,022,407		Horch et al.	06/11/1991
	A16	5,019,761		Kraft	05/28/1991
	A17	4,934,694		McIntosh	06/19/1990
	A18	4,930,770		Baker	06/05/1990
	A19	4,891,764		McIntosh	01/02/1990
	A20	4,794,392		Selinko	12/27/1988
	A21	4,713,007		Alban	12/15/1987
	A22	4,708,656		de Vries et al.	11/24/1987
	A23	4,599,070		Hladky et al.	07/08/1986
	A24	4,581,491		Boothroyd	04/08/1986
	A25	4,513,235		Acklam et al.	04/23/1985
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<sup>1</sup> Unique citation designation number.

<sup>2</sup> See attached Kinds of U.S. Patent Documents.

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Sheet	2	of	3	Technology Center 2606	
				IMMR-020/03US (New) IMMIP018B (Old)	

## FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document			Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YYYY
		Office <sup>1</sup>	Number <sup>2</sup>	Kind Code <sup>3</sup> (if known)		
	B1		0 349 086	A1	Stork Kwant B.V.	01/03/1990
	B2		WO 95/33459	A1	EXOS, Inc.	11/30/1995

## OTHER PRIOR ART - NON PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	C1	Baigrie, "Electric Control Loading - A Low Cost, High Performance Alternative," <i>Proceedings of Interservice/Industry Training Systems Conference</i> , pp. 247-254, November 6-8, 1990	
	C2	Iwata, "Pen-based Haptic Virtual Environment," 0-7803-1363-1/93 IEEE, pp. 287-292, 1993	
	C3	Russo, "The Design and Implementation of a Three Degree of Freedom Force Output Joystick," <i>MIT Libraries Archives</i> pp. 1-131, May 1990, archived 8/14/90	
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	C5	Jones et al., "A perceptual analysis of stiffness," ISSN 0014-4819 Springer International (Springer-Verlag); <i>Experimental Brain Research</i> , Vol. 79, No. 1, pp. 150-156, 1990	
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	C7	Snow et al., "Model-X Force-Reflecting-Hand-Controller," NT Control No. NPO-17851; JPL Case No. 7348, pp. 1-4 with 45 pages of attachments, 06/15/1989	
	C8	Ouh-Young, "Force Display in Molecular Docking," Doctoral Dissertation, University of North Carolina at Chapel Hill, UMI Order No. 9034744, p. 1-369, 1990	
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	C13	Stanley et al., "Computer Simulation of Interacting Dynamic Mechanical Systems Using Distributed Memory Parallel Processors," DSC-Vol. 42, <i>Advances in Robotics</i> , pp. 55-61, ASME 1992	
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	C17	Adelstein, "A Virtual Environment System For The Study of Human Arm Tremor," <i>Ph.D. Dissertation</i> , Dept. of Mechanical Engineering, MIT, June 1989, archived 3/13/90	
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	C19	Bejczy et al., "Generalization of Bilateral Force-Reflecting Control of Manipulators," <i>Proceedings Of Fourth CISIM/IFToMM</i> , Sep. 8-12, 1981	

<sup>1</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3).<sup>2</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document.<sup>3</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible.<sup>4</sup> Applicant is to place a check mark here if English language Translation is attached.



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Substitute for form 1449A/PTO				<i>Complete if Known</i>	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT <i>(use as many sheets as necessary)</i>				RECEIVED	
Sheet	3	of	3	Application Number	09/934,739 MAR 3 2003
				Filing Date	August 22, 2001
				First Named Inventor	Louis B. ROSENBERG
				Group Art Unit	2675 Technology Center 2600
				Examiner Name	Bell, Paul A.
				Attorney Docket Number	IMMR-020/03US (New) IMM1P018B (Old)

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C21	Minsky, "Computational Haptics: The Sandpaper System for Synthesizing Texture for a Force-Feedback Display," <i>Ph.D. Dissertation, MIT, June 1995, archived 7/6/95</i>
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C26	Howe, "A Force-Relating Teleoperated Hand System for the Study of Tactile Sensing in Precision Manipulation," <i>Proceedings of the 1992 IEEE International Conference on Robotics and Automation, Nice, France, May 1992</i>
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C30	Bejczy et al., "A Laboratory Breadboard System For Dual-Arm Teleoperation," <i>SOAR '89 Workshop, JSC, Houston, TX, July 25-27, 1989</i>
C31	Ouhyoung et al., "A Low-Cost Force Feedback Joystick and Its Use in PC Video Games," <i>IEEE Transactions on Consumer Electronics, Vol. 41, No. 3, August 1995</i>
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C33	Bejczy, et al., "Universal Computer Control System (UCCS) For Space Telerobots," <i>CH2413-3/87/0000/0318501.00 1987 IEEE, 1987</i>
C34	Ouhyoung, et al., "A Force Feedback Joystick and Its Use in PC Video Games" <i>International Conference on Consumer Electronics - Digest of Technical Papers, IEEE, Conf. 14, June 07, 1995</i>

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Unique citation designation number.

<sup>2</sup> Applicant is to place a check mark here if English language Translation attached.

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Sheet 1 of 3

*Complete If Known*

Application Number	09/934,739
Filing Date	August 22, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A. Bell
Attorney Docket Number	IMMR020/03US

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### U.S. PATENT DOCUMENTS

Examiner	Cite No. <sup>1</sup>	Document Number		Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code <sup>2</sup> (if known)			
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		6,160,489		12/12/2000	Perry et al.	
		6,111,577		8/29/2000	Zilles et al.	
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		4,127,752		11/28/1978	Lowthorp	
		2,972,140		2/14/1961	Hirsch	

Examiner Initials <sup>*</sup>	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
		JP	H2-185278		7/19/1990	Taito Corporation	
		JP	H4-8381		1/13/1992	Epoch Co. and Key-Planning Co.	
		JP	H7-24147		1/27/1995	Sega Corporation	
		JP	H5-192449		8/3/1993	Taito Corporation	

Examiner Signature	<i>D. A. Daria</i>	Date Considered	11-29-05
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<sup>\*</sup>EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> Kind Codes of U.S. Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

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INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

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Sheet

2

of 3

Complete if Known

Application Number	09/934,739
Filing Date	August 22, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A. Bell
Attorney Docket Number	IMMR020/03US

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## OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.
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		KONTARINIS et al., "Tactile Display of Vibratory Information in Teleoperation and Virtual Environments," <i>PRESENCE</i> , 4(4):387-402, Harvard Univ., 1995.
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		KACZMAREK et al., "Tactile Displays," <i>Virtual Environment Technologies</i> , Chap. 9, pp. 349-414.
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✓		"Component Maintenance Manual With Illustrated Parts List, Coaxial Control Shaker Part no. C-25502," Safe Flight Instrument Corporation, Revised 28 January 2002 (3 pages).

Examiner Signature	<i>P. D. MARIA</i>	Date Considered	11-29-05
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<sup>1</sup> EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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## **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

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Sheet 3 of 3

**Complete if Known**

Application Number 09/934 739

**Filing Date** August 22, 2001

**First Named Inventor** **Louis B. Rosenberg**

Art Unit 2675

**Examiner Name**

Attorney Docket Number **IMMR020/0**

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## OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

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	SCANNELL, "Taking a Joystick Ride," <i>Computer Currents</i> , Boston Edition, Vol. 9, No. 11, November 1994
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	NOLL, "Man-Machine Tactile," <i>SID Journal</i> , July/August 1972 Issue.
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Examiner Signature	P. DiMaria	Date Considered	11-28-05
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**EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

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Sheet 1 of 14

## Complete If Known

Application Number	09/934,739
Filing Date	August 22, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A. Bell
Attorney Docket Number	IMMR020/03US

U.S. PATENT DOCUMENTS				
Examiner	Cite No. <sup>1</sup>	Document Number Number Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		6,111,577	8/2000	Zilles et al.
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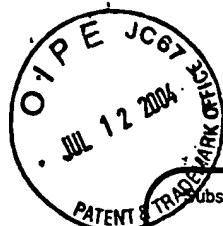
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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 2 of 14

**Complete If Known**

Application Number	09/934,739
Filing Date	August 22, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A. Bell
Attorney Docket Number	IMMR020/03US

**U.S. PATENT DOCUMENTS**

Examiner	Cite No. <sup>1</sup>	Document Number Number Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		5,739,811	4/1998	Rosenberg et al.	
		5,736,978	4/1998	Hasser et al.	
		5,734,373	3/1998	Rosenberg et al.	
		5,731,804	3/1998	Rosenberg	
		5,721,566	2/1998	Rosenberg et al.	
		5,714,978	2/1998	Yamanaka et al.	
		5,709,219	1/1998	Chen et al.	
		5,694,013	12/1997	Stewart et al.	
		5,691,898	11/1997	Rosenberg et al.	
		5,691,747	11/1997	Amano	
		5,666,473	9/1997	Wallace	
		5,666,138	9/1997	Culver	
		5,643,087	7/1997	Marcus et al.	
		5,642,469	6/1997	Hannaford et al.	
		5,631,861	5/1997	Kramer	
		5,629,594	5/1997	Jacobus et al.	
		5,625,576	4/1997	Massie et al.	
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		5,623,582	4/1997	Rosenberg	
		5,619,180	4/1997	Massimino et al.	
		5,596,347	1/1997	Robertson et al.	
		5,591,924	1/1997	Hilton	
		5,589,854	12/1996	Tsai	
		5,587,937	12/1996	Massie et al.	
		5,586,257	12/1996	Perlman	
		5,583,478	12/1996	Renzi	
		5,577,981	11/1996	Jarvik	
		5,576,727	11/1996	Rosenberg et al.	
		5,572,639	11/1996	Grant	
		5,570,111	10/1996	Barrette et al.	
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		5,565,887	10/1996	McCambridge et al.	
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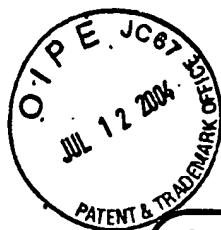
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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 3 of 14

### Complete If Known

Application Number	09/934,739
Filing Date	August 22, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A. Bell
Attorney Docket Number	IMMR020/03US

### U.S. PATENT DOCUMENTS

Examiner	Cite No. <sup>1</sup>	Document Number Number Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		5,526,480	6/1996	Gibson	
		5,513,100	4/1996	Parker et al.	
		5,512,919	4/1996	Araki	
		5,482,051	1/1996	Reddy et al.	
		5,473,235	12/1995	Lance et al.	
		5,471,571	11/1995	Smith et al.	
		5,467,763	11/1995	McMahon et al.	
		5,459,382	10/1995	Jacobus et al.	
		5,451,924	9/1995	Massimino et al.	
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		5,313,230	5/1994	Venolia et al.	
		5,298,890	3/1994	Kanamaru et al.	
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		5,296,848	3/1994	Ledley	

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P. D. HARRIA

Date  
Considered

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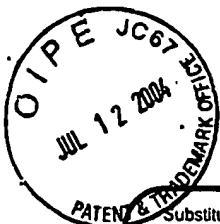
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INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT

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Sheet 4 of 14

## Complete if Known

Application Number	09/934,739
Filing Date	August 22, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A. Bell
Attorney Docket Number	IMMR020/03US

U.S. PATENT DOCUMENTS				
Examiner	Cite No. <sup>1</sup>	Document Number Number Kind Code <sup>2</sup> (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		5,289,273	2/1994	Lang
		5,286,203	2/1994	Fuller et al.
		5,275,565	1/1994	Moncrief
		5,264,768	11/1993	Gregory et al.
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		5,128,671	7/1992	Thomas, Jr.

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 5 of 14

Complete if Known

Application Number	09/934,739
Filing Date	August 22, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A. Bell
Attorney Docket Number	IMMR020/03US

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		5,126,948	6/1992	Mitchell et al.	
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		5,107,080	4/1992	Rosen	
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		4,868,549	9/1989	Affinito et al.	
		4,849,692	7/1989	Blood	
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		4,823,634	4,1989	Culver	
		4,819,195	4/1989	Bell et al.	

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## INFORMATION DISCLOSURE STATEMENT BY APPLICANT

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Sheet 6 of 14

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		4,811,608	3/1989	Hilton	
		4,803,413	2/1989	Kendig et al.	
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		4,787,051	11/1988	Olson	
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		4,654,648	3/1987	Herrington et al.	
		4,653,011	3/1987	Iwano	
		4,638,798	1/1987	Sheldon et al.	
		4,632,341	12/1986	Repperger et al.	
		4,601,206	7/1986	Watson	
		4,593,470	6/1986	Davies	
		4,571,834	2/1986	Fraser et al.	
		4,550,617	11/1985	Fraigner et al.	
		4,550,221	10/1985	Mabush	
		4,477,973	10/1984	Davies	
		4,477,043	10/1984	Repperger	
		4,448,083	5/1984	Hayashi	
		4,436,188	3/1984	Jones	
		4,398,889	8/1983	Lam et al.	
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		4,148,014	4/1979	Burson	
		4,125,800	11/1978	Jones	
		4,114,882	9/1978	Mau	

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Signature

P. DHAJIA

Date  
Considered

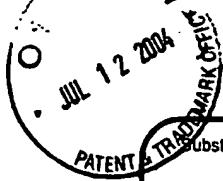
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Sheet 7 of 14

**Complete If Known**

Application Number	09/934,739
Filing Date	August 22, 2001
First Named Inventor	Louis B. Rosenberg
Art Unit	2675
Examiner Name	Paul A. Bell
Attorney Docket Number	IMMR020/03US

U.S. PATENT DOCUMENTS				
Examiner	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
		Number Kind Code <sup>2</sup> (if known)		
		3,944,798	3/1976	Eaton
		3,919,691	11/1975	Noll
		3,890,958	6/1975	Fister et al.
		3,875,488	4/1975	Crocker et al.
		3,795,150	3/1974	Eckhardt
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		2,906,179	9/1959	Bower

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Examiner Initials <sup>3</sup>	Cite No. <sup>1</sup>	Foreign Patent Document			Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines Where Relevant Passages or Relevant Figures Appear
		Country Code <sup>3</sup>	Number <sup>4</sup>	Kind Code <sup>5</sup> (if known)			
		WO	9720305		6/1997		
		WO	9719440		5/1997		
		WO	9712357		4/1997		
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		WO	9642078		12/1996		
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		WO	9622591		7/1996		
		WO	9616397		5/1996		
		WO	9532459		11/1995		
		WO	9520788		8/1995		
		WO	9520787		8/1995		
		WO	9510080		4/1995		
		WO	9502801		1/1995		
		WO	9502233		of 0000		
		WO	9200559		1/1992		
		JP	4-34610		2/1992		
		GB	2254911	A	10/1992		
		EP	0626634	A2	11/1994		
		EP	0085518	A1	8/1983		
		EP	0265011	A1	4/1998		

Examiner Signature

P. Dharia

Date Considered

11-29-04

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		Application Number	09/934,739
		Filing Date	August 22, 2001
		First Named Inventor	Louis B. Rosenberg
		Art Unit	2675
		Examiner Name	Paul A. Bell
		Attorney Docket Number	IMMR020/03US
Sheet	8	of	14

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Examiner Signature	R. DHALIA	Date Considered	11-28-05
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Sheet 9 of 14

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		"Foot-Operated Mouse," IBM Technical Disclosure Bulletin, Apr. 1986, vol. 28, No. 11.
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### OTHER PRIOR ART – NON PATENT LITERATURE DOCUMENTS

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<i>BR</i>		BURDEA, Grigore et al., "Distributed Virtual Force Feedback," IEEE, May 2, 1993, pp. 25-44.
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Examiner  
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*P. D'ARIA*

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First Named Inventor	Louis B. Rosenberg	
Art Unit	2675	
Examiner Name	Paul A. Bell	Technology Center 2600
Attorney Docket Number	IMMR020/03US	

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BN		KELLEY, A. J. et al., "MagicMouse: Tactile and Kinesthetic Feedback in the Human-Computer Interface using an Electromagnetically Actuated Input/Output Device," Dept. of Elec. Eng., Univ. of Brit. Columbia, 1993, pp. 1-27.
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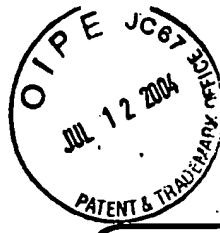
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Application Number

09/934,739

Filing Date

August 22, 2001

First Named Inventor

Louis B. Rosenberg

Art Unit

2675

Examiner Name

Paul A. Bell

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		ROSENBERG, Louis B., Crew Systems Directorate Biodynamics and Biocommunications Division Wright-Patterson, Air Force Material Command, Mar. 1993, pp. 1-45.
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P. D. D'ARIA

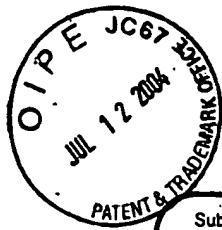
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